

Claims

- [c1] A system for preventing cross-flow between at least two formations intersecting a wellbore, comprising:
a flow valve controlling the flow from one of the formations;
the flow valve actuated with a hydraulic control line;
a cross-flow prevention valve selectively preventing flow between the formations; and
the cross-flow prevention valve actuated with the hydraulic control line.
- [c2] The system of claim 1, wherein the flow valve is a multi-position valve.
- [c3] The system of claim 2, wherein the cross-flow prevention valve is actuated and the flow valve is shifted from one to another position with each pressure cycle in the hydraulic control line.
- [c4] The system of claim 1, further comprising another flow valve controlling the flow from another of the formations.
- [c5] The system of claim 4, wherein the another flow valve is actuated with the hydraulic control line.

- [c6] The system of claim 1, wherein the flow valve is a sleeve valve.
- [c7] The system of claim 1, wherein the wellbore comprises an injection wellbore.
- [c8] The system of claim 1, wherein the cross-flow prevention valve comprises a flapper valve.
- [c9] The system of claim 8, wherein:
the flapper valve comprises a mandrel housing a movable actuator and a flapper; and
the actuator is movable between a first position that forces the flapper to an open arrangement and a second position that enables the flapper to move to a closed arrangement.
- [c10] The system of claim 9, wherein the flapper valve comprises a biasing mechanism that selectively biases the actuator between the first and second positions.
- [c11] The system of claim 10, wherein the biasing mechanism biases the actuator to the first position when fluid in the hydraulic control line is below a certain pressure.
- [c12] The system of claim 11, wherein the fluid in the hydraulic control line is above a certain pressure that overcomes the biasing mechanism to move the actuator to

the second position.

- [c13] The system of claim 12, wherein the flapper includes an internal biasing that pivots the flapper to a closed position when the actuator is in the second position.
- [c14] A system for preventing cross-flow between at least two formations intersecting a wellbore, comprising:
 - a multi-position flow valve controlling the flow from one of the formations;
 - a cross-flow prevention valve selectively preventing flow between the formations; and
 - the cross-flow prevention valve comprises a flapper valve.
- [c15] The system of claim 14, wherein the flow valve and the flapper valve are actuated with the same hydraulic control line.
- [c16] The system of claim 15, wherein the flapper valve is actuated and the flow valve is shifted from one to another position with each pressure cycle in the hydraulic control line.
- [c17] The system of claim 14, wherein the flapper valve is self-biased to a closed position when a hydraulic control line operatively connected to the flapper valve is pressurized below a certain pressure.

- [c18] The system of claim 17, wherein the flapper valve is moved to an open position when the pressure in the hydraulic control line is above a certain pressure.
- [c19] A method for preventing cross-flow between at least two formations intersecting a wellbore, comprising:
controlling the flow from one of the formations with a flow valve;
selectively preventing flow between the formations with a cross-flow prevention valve; and
actuating the cross-flow prevention valve and the flow valve with the hydraulic control line.
- [c20] The method of claim 19, wherein the flow valve comprises a multi-position valve and the controlling step comprises changing the positions of the multi-position flow valve.
- [c21] The method of claim 20, wherein the actuating step comprises performing one pressure cycle in the hydraulic control line.
- [c22] The method of claim 20, wherein the cross-flow prevention valve comprises a flapper valve and the method further comprises biasing the flapper valve to a closed position when the hydraulic control line is pressurized below a certain pressure.

[c23] The method of claim 22, further comprising moving the flapper valve to an open position when the hydraulic control line is pressurized above a certain pressure.